

INSTRUCTIONS

...or...

Installing and
Operating

Your HB Silent Twin Automatic AIR COMPRESSOR



*Read These Instructions Step by Step
as You Set Up the Machine and
Put It Into Operation.*

Successful results can be guaranteed only by following instructions. Save yourself lots of time and bother by reading this booklet before you attempt to use your Air Compressor.

The Hobart Bros. Co.

"Successful Manufacturers Since 1893"

Troy, Ohio

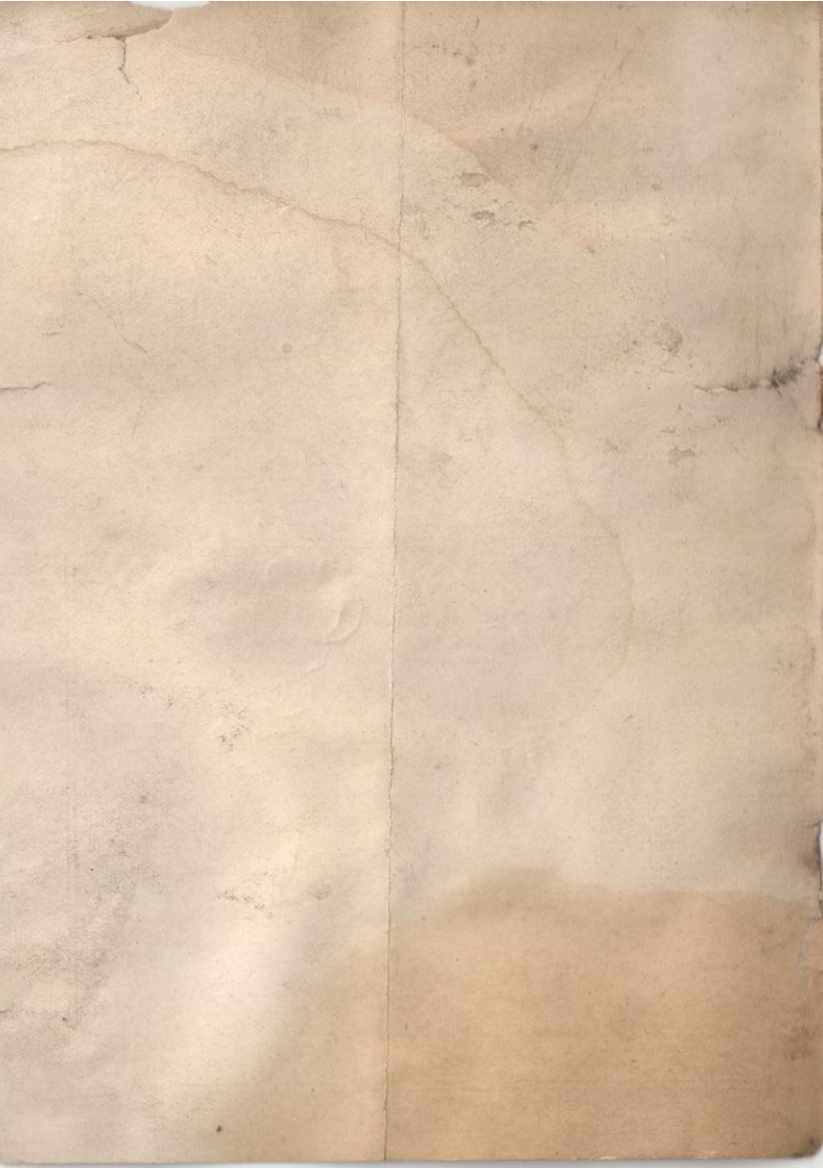


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Read These Instructions Step by Step as You Set Up Your Compressor and Put It Into Operation. It Pays.

1.—Description of Machine

The HB Automatic Air Compressor is the product of many years experience in Electrical and Mechanical Compressor Design. Our engineering force, composed of graduate electrical and mechanical engineers, has worked out the most compact and highly efficient combination of electrical drive and compressor ever put on the market.

It is not an assembled product of motor bought in one place and compressor bought or built some place else and belted together. HB is built complete—motor, pump, tank and all—in our own factories. The Twin Cylinder Compressor, driven by the special HB Ball Bearing Motor through an automobile type spiral, bevel transmission, makes it possible to mount the outfit on an upright tank, requiring very little floor space for your air unit. HB Motors are specially designed for compressor use, wound and built complete in our own factory.

You are assured of best results with an HB Compressor, if you follow these instructions carefully in setting up and caring for the outfit.

2.—Setting Up and Locating Machine

Uncrate the compressor carefully and place it in its permanent location, which should be a light, clean place, chosen also with a view to accessibility. Do not put it away in a dark cellar where it will never be oiled or kept clean. The HB upright compressor occupies very little room and operates very quietly. In fact, many users locate it right in their salesroom where it attracts a lot of attention and impresses customers with the efficiency of your equipment. By all means put it in a place that is heated in winter—so the moisture collecting in the tank will not freeze in cold weather.

HB SILENT TWIN AIR COMPRESSOR

SIZES 2 to 8 Cu.Ft. - AIR COOLED

SAFETY VALVE No.1

TO REMOVE DIRT
FROM SEAT-TWIST
LIFTING STEM

AUTOMATIC SWITCH

USUALLY SET TO CUT IN AT
115# OUT AT 150#

CHECK VALVE

PRESSURE GUAGE

HEAD

WITH PLATE VALVES

BREATHER INTAKE

OIL TRAP

DRAIN WEEKLY

TWIN CYLINDERS

BRUSHES

SEE THAT THEY
MAKE GOOD CON-
TACT AND DO NOT
STICK IN HOLDERS

BREATHER & OIL FILLER

BALL BEARINGS

GREASE EVERY
3 MONTHS

AIR VALVE

SAFETY VALVE No.2

TO REMOVE DIRT
TWIST LIFTING VALVE

HEAVY GUAGE

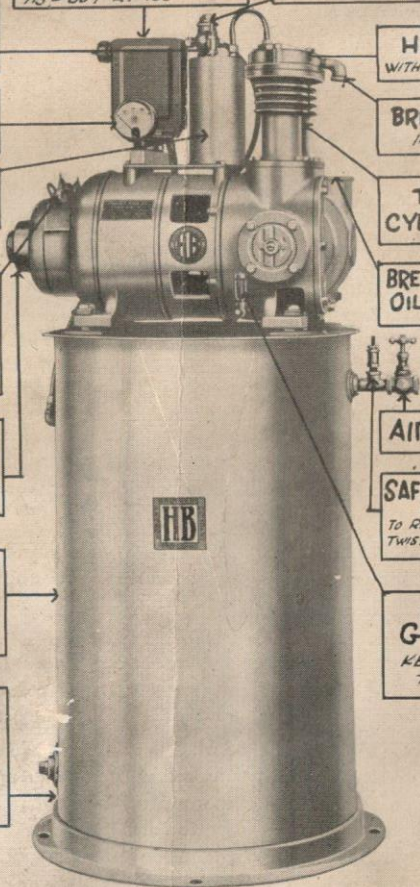
WELDED
STEEL TANK

OIL GUAGE

KEEP FILLED
TO MARK

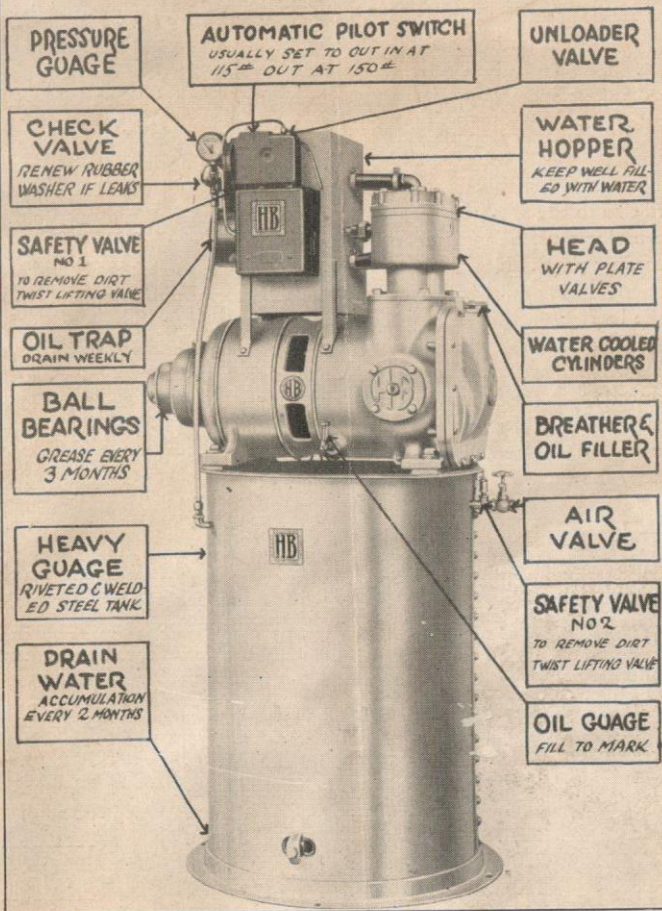
DRAIN WATER

ACCUMULATION
HERE EVERY 2
MONTHS



HB SILENT TWIN AIR COMPRESSOR

SIZES 12-16-20 CU.FT. - WATER COOLED



3.—Electrical Connections

First check carefully the name plate specifications to be sure that they correspond with the power supply you have available.

Remove the switch cover and connect the power wires to the two unused binding posts marked "Line". Use wire ample in size to prevent voltage drop. For connecting to a 110 volt circuit, at least No. 12 wire should be used. A 220 volt supply line will afford better power supply because it is steadier in voltage and less subject to line drop. Tighten the connections securely at the binding posts. All splices must be soldered.

If the motor is for single phase, the name plate will read 110/220 volts, but the machine can be operated only on the voltage indicated on the card tied to the machine. If you desire to operate on the other voltage, the motor must be reconnected according to the diagram in Fig. 1 (see preceding page). Note that for 110 volt operation the leads C and D are connected in parallel and go to one binding post of the automatic switch while leads E and F are connected together and go to the other binding post. For 220 volt operation leads C and F go to the two switch binding posts while D and E are connected and soldered together forming a series connection of the motor. If you are getting a large, water-cooled compressor, it should be operated only single phase 220 volts or on three phase. Do not change to 110 volts unless you first take it up with the factory for further instructions.

4.—Fuse Requirements

Be sure fuses are of ample size to prevent blowing when loaded with the maximum amount of current. The 12, 16 and 20 cubic foot water cooled compressors have overload protection in the starting box, so fuses may be omitted with these models. The following table shows fuse requirements of all HB Compressors:

Phase	Volts	2, 2½ or 3 cu. ft. sizes	4 or 6 cu. ft. sizes	12, 16 or 20 cu. ft. sizes
2 or 3	220	10 amp.	10 amp.	30 amp.
2 or 3	110	20 amp.	20 amp.	60 amp.
Single	220	20 amp.	20 amp.	60 amp.
Single	110	30 amp.	30 amp.	-----
D. C.	220	20 amp.	20 amp.	60 amp.
D. C.	110	30 amp.	30 amp.	-----
D. C.	32	60 amp.	60 amp.	-----

DIAGRAM OF SWITCH WIRING FOR OPERATING ON 110 VOLT OR 220 VOLT POWER CIRCUITS

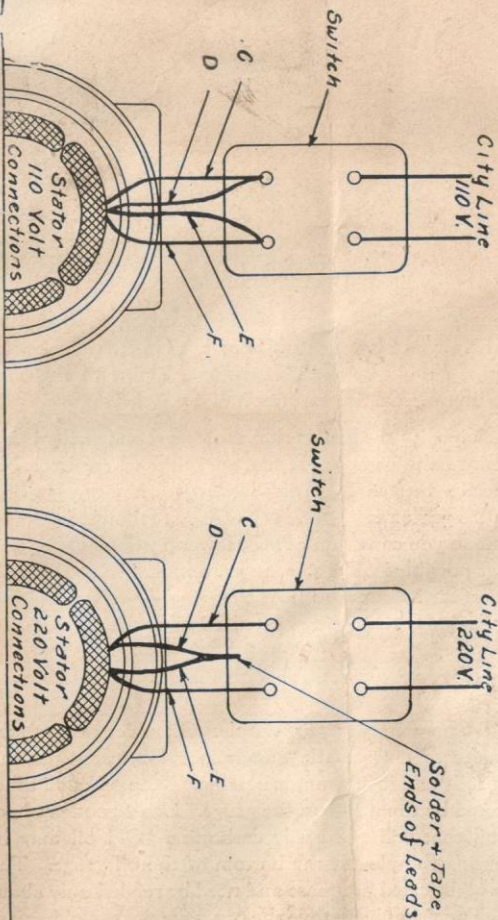


Fig. 1

5.—Motor Supply Wires (*Proper Sizes B & S Gauges*)

Phase	Volts	2, 2½ or 3 cu. ft. sizes	4 or 6 cu. ft. sizes	12, 16 or 20 cu ft. sizes
2 or 3	220	14	14	12
2 or 3	110	14	14	8
Single	220	14	12	8
Single	110	12	10	-----
D. C.	220	14	12	8
D. C.	110	12	8	6
D. C.	32	8	6	-----

6.—Air Connections

For the air cooled compressors a ½" to ¾" pipe is sufficient, depending upon the distance the air line has to run. For the larger, water-cooled outfits, ¾" to 1" pipe should be used. Connect the pipe to the compressor outlet with a union. Do not connect it direct.

It is best to slope the pipe, if possible, so that moisture condensing in the pipe will flow back into the compressor storage tank, where it can be drained out periodically, instead of letting it flow toward the air hose where it will go into the customers' tires. If pockets are unavoidable, put a stop cock in the line so you can drain out the lower portions of the line. Run the pipe as far as possible inside, so as to prevent possible freezing in winter. 150 pounds of air is harder to hold than water—so be sure that all joints are made absolutely tight with white lead or shellac.

7.—Lubrication

Lubrication of the HB Compressor is quite simple. Oil added through the breather at the crankcase end of the compressor lubricates pistons, bearings, connecting rods and inside motor bearing. Keep oil at all times up to the level indicated by the mark on the gauge. Use a good grade of automobile engine oil that will not easily carbonize. Old oil may be drained out by removing the plug at the bottom of the oil gauge. The front motor bearing is lubricated by grease and need be refilled only about once in six months. Then simply remove the cap, take out the old grease and replace with clean, new grease.

8.—Oil Trap

On top of the compressor is an oil trap which has several uses. First, it collects oil and moisture from the air after compression. Second, it acts as a cushion on the check valve so that the seat does not hammer or pound with every stroke of the pistons. Third, it allows the compressor to start without load—for the air in the trap slowly leaks back through the discharge valves in the head after the compressor stops, so that the next time it starts the pressure ahead is zero until the trap is filled with air. Do not allow moisture and oil to collect in the trap indefinitely—but drain it daily. In draining, hold a can over the drain outlet on the oil trap so the oily emulsion does not run down on the machine or blow out against the wall. It is possible to connect the drain with a $\frac{1}{8}$ " pipe to the outside, locating the valve on the end of the pipe, if so desired.

9.—Air Storage Tank

HB Storage Tanks are made of extra heavy-sheet steel, heavier than most compressor tanks and really heavier than required by the safety rules. The smaller 14" tanks are double welded, while the larger ones are first riveted and then double weld. In addition, the two safety valves are added, conforming to boiler codes. Each tank is provided with a drain from which the oil and moisture should be drained every month.

10.—Pressure Switch

The HB pressure switch is usually set to cut in at 115 lbs. and out at 150 lbs. While the adjustment can be changed by turning up or down the nut on top of the spring, it is not advisable to make any change unless you first take it up with the factory. If you raise the pressure too high you may overload the motor.

The switch contacts are of ample design and heavy. They should be kept bright and clean. Should they become overloaded, due to low voltage and excessive current on the line—or if they should be burnt due to arcing—they should be brightened up or replaced. New contacts can be furnished at any time, if you give the serial number of your machine.

A release valve on the side of the switch is used on all 6 cubic foot compressors and larger. This valve releases the air in the oil trap just after the compressor stops so that it starts again without load. Moisture and

oil from the release valve should be drained or piped away or into a container. See that this release valve does not become stopped up or stuck. It should work freely to afford sure protection against overloading the motor.

11.—Safety Valves

All safety valves are of special HB design. They can be lifted and tested at any time, will not stick—and conform to the pressure code. Two valves are used on each HB Compressor—one on the tank and one on the oil trap. Should they leak, due to dirt getting under them, the dirt can be removed or ground away by simply turning the stem with the fingers.

12.—Check Valves

The main thing to watch with the check valve is the condition of the seat. A metal seated check valve, raising and closing continually would never hold air tight. A rubber seated valve holds but is, of course, subject to deterioration. We have experimented for years with check valve material and are using the best grade of special composition rubber seats that are obtainable for this purpose. When replacement is necessary, simply remove the hex nut on top of the valve, after releasing the air from the tank, and take out the plunger, on the lower end of which is the composition washer. New check valve washers are furnished for only 10c each.

13.—Water Cooled Compressors

On the larger size compressors, 12, 16 or 20 cu. ft., it is necessary to use water for cooling so a water hopper is provided and connected to water pockets around the cylinders. The larger motors on these larger outfits, also, call for a larger starting switch so the small diaphragm switch is used as a pilot switch to operate the main starting switch. The main starting switch is provided for overload protection and can be reset, in case it is thrown by an overload, by merely pushing the small lever on the switch forward to the right. With this overload protection, it is best to use no fuses at all—or at any rate very large fuses so they will not blow.

A release valve on the pilot switch is also provided, permitting the air to escape from the oil trap when the motor stops so that the Motor can start again without load. See that this release valve operates freely and does not become clogged with dirt or gummed with oil.

14.—Important Instructions for Operating HB Water-Cooled Compressors

If the compressor is to be operated continuously, city water should be piped to the reservoir with an overflow connection from reservoir to drain, as shown in Fig. 2 on page 14. The valve can be set to allow a trickling stream of water in and out of the reservoir. If it is desired to make this flow of water automatic, a special diaphragm valve can be supplied for \$9.75. It starts the water when the compressor starts and shuts it off when the compressor stops.

If the compressor is to be operated only intermittently, such city water connection is unnecessary provided plenty of water is kept in the reservoir at all times.

CAUTION: If the compressor is operated without water, carbon will form and interfere with the operation of the compressor valves.

15.—Requirements of Air Operated Shop Equipment

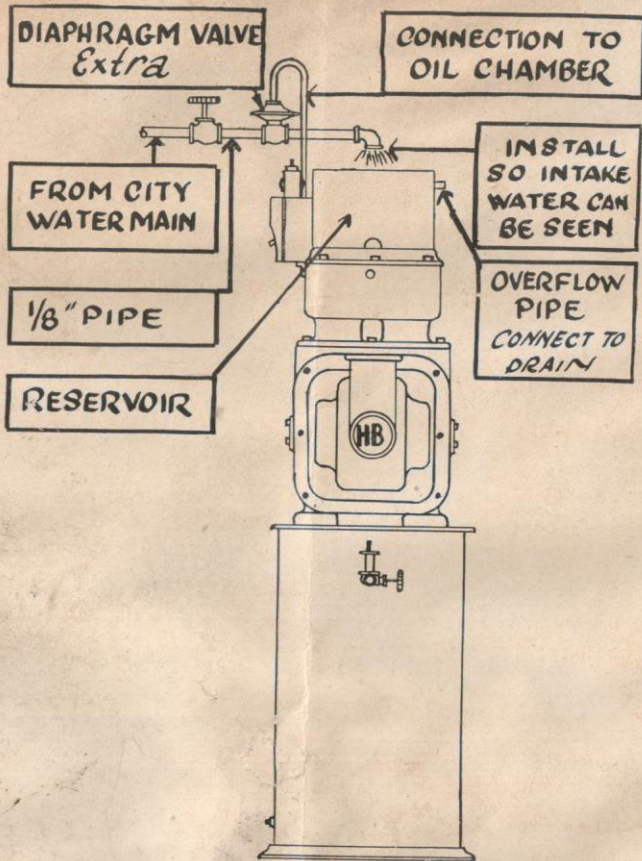
If your compressor runs too much of the time, it is possible that your air-operated equipment requires too much air for the capacity of the compressor you have installed. The table below will help you to check up on this condition. It shows how many cubic feet of air per minute are required to operate the more widely used tools and equipment.

Air Requirement Table

Description	Cu. ft.
Tire Inflating (per hose line)---	2
Tire Tools-----	2 to 6
Spring Oiling-----	2 to 4
Grease Guns-----	2 to 4
Blow Guns-----	2 to 4
Gasoline Pumps (per 5 gal.)---	1
Garage Door Openers-----	2 to 4
Engine Cleaning-----	4 to 6
Valve Grinding-----	2
Spray Painting (continuous)---	8
Spray Painting (intermittent) -	5
Car Lifts (per operation)-----	20
Air Hammers-----	16 to 20
Air Drills-----	16 to 20

IMPORTANT

In using the table at the left, remember that the various pieces of equipment will not all be in use at the same time. The figures given indicate the number of cubic feet of air required per minute while the equipment is actually in use. It is essential, however, that your compressor be big enough to handle the largest piece of equipment no matter how infrequently you use it. If you'll tell us just what kind of equipment you want to operate with air, we'll recommend the size compressor you ought to have.



SUGGESTED METHOD OF INSTALLING
A WATER COOLED COMPRESSOR

16.—A Word About Leaks

In any air installation there are many chances for leaks but there are four main places to look for them:

1. In the hose or chuck at the curb.
2. In the pipe connections in the air line.
3. In the Safety Valve on the compressor.
4. In the Check Valve on the compressor.

Leaks can best be detected by brushing soapy water or oil on the connections, valves and other parts of the air system so that bubbles will show up just where the leaks are. In testing for leaks in the compressor itself, segregate the air line from the compressor by closing the tank valve.

A leaky check valve allows air to leak back to the compressor head and out through the head valves. This destroys the unloading feature of the oil trap and causes the compressor to start against load. Remedy a leaking check valve at once by replacing the check valve washer (see Sec 12.)

Safety valve leaks are remedied by turning the valve stem by hand, that grinding the seat and removing dust that may have collected under it.

Remember, it is not uncommon for any compressor to leak a little. Some folks expect to hold air bottled up, with the tank valve closed, and get by without any drop in pressure over a period of a week or more. It can't be done. You know how an automobile tire will gradually lose pressure, even without a puncture. Besides, even if your compressor had to pump 5 minutes or more twice a day between switch settings, just to replace loss in compression, the current consumed would be negligible.

17.—If Compressor Runs and Pumps Slowly

Sometimes a compressor will run and pump slowly because the motor will not come up to the speed necessary to cause the short-circuiting device to fly in and change it over from repulsion to induction operation. To check this, lift one brush while the machine is running. If the motor stops with one brush lifted, that is a sign that it has been running on the brushes or as a repulsion motor and is not running up to speed. If motor continues to run with one brush lifted, that shows it is running up to the proper speed.

If this test shows the motor not running up to proper speed, the trouble may be due either to low line voltage or to brushes sticking in the brush

holders so they don't make good contact. Don't let the machine run this way as it will cause sparking, heating and roughing of the commutator and will melt the solder out of the armature leads. If low line voltage is the cause, put in heavier power lines (See Sec. 3 and 5). If brushes are sticking, sand them and commutator with No. 00 sandpaper.

With the larger machines this trouble may be due to check valve leaking so the oil trap fills with high pressure air and causes the motor to start against full load. If so, put in a new check valve washer (See Sec. 12). Or, the small unloading valve on the side of the switch may need cleaning. If so, remove the valve and dismantle, washing the parts carefully in gasoline to remove all gum and dirt. Then reassemble it, making sure that it releases the air in the oil trap properly as this is your protection against overloading the motor.

18.—Care of the Commutator

Under ordinary running conditions, the commutator of the compressor motor needs very little attention because it is in service for only a short period in starting, after which it is cut out by the short-circuiting device:

If, however, it should for any reason run any length of time on the brushes, the sparking that results will roughen the surface of the commutator. When the cause of running on the brushes has been removed (see Sec. 17) the commutator will usually polish and take care of itself.

Should you find it necessary to sand the commutator, proceed as follows. Bring the motor up to speed, by putting extra pressure on the brushes if need be. Then mark the exact setting of the brush holder. After marking, remove the brush holder while you brighten the surface of the commutator with No. 00 sandpaper. Then replace the brush holder. If it is not put back exactly where it was, the machine will not start with full torque and may even run backwards. The setting of the brush holder is extremely important for starting torque.

If the sparking has gone too far, it may be necessary to remove the armature, turn the commutator and re-solder the leads. In this case it is best to write us for instructions. Always give serial number of your machine when writing us about it.

Special Features



The Distinctive Features described in the following pages are all embodied in your HB Silent Twin Automatic Air Compressor and assure you of the very best air service.

If you follow the foregoing instructions and give your HB Compressor reasonable care, it will provide you with a Dependable Air Supply for years to come.

When business growth calls for still more air, it will be a simple matter to install another HB alongside your present one—or to trade it in for a liberal allowance on a larger HB.

*Always Give Serial Number
of Your Machine When
Writing Us About It*



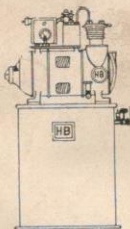
The Hobart Bros. Co.

"Successful Manufacturers Since 1893"

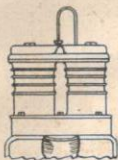
Troy, Ohio



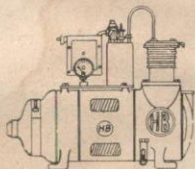
SILENT SPIRAL BEVEL TRANSMISSION running in oil. This exclusive HB feature cannot be matched in any other compressor on the market because no other compressor manufacturer builds motor, pump, transmission and all complete in one factory. It not only eliminates the old noisy power-wasting belt, but also makes possible the compact, single unit construction essential to to greatest efficiency and the space saving upright mounting. Note that this is the same type transmission as is used in the high priced automobiles of today.



SPACE SAVING UPRIGHT MOUNTING is another exclusive HB feature of special interest to oil companies that want to conserve valuable floor space in their retail stations. The smallest HB requires floor space only 18" in diameter and the largest only 28". The average size HB's most generally used in filling stations require only 24" diameter. This fact combined with the unusually silent operation of the HB Compressor makes it a favorite where the compressor must be installed in a small room.



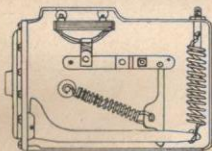
TWIN CYLINDERS divide the work and greatly diminish the wear on moving parts as compared with a single cylinder outfit of similar capacity. The slower pump speed permits gearing for ample power and contributes substantially to HB's reputation for dependable, long lived service.



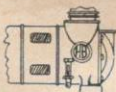
COMPACT, SINGLE UNIT CONSTRUCTION. The specially designed HB ball-bearing motor is built directly into the HB twin cylinder compressor by means of the exclusive HB silent spiral transmission, all in one housing. All parts are easily accessible. Crankshaft thrust bearings are easily adjustable at both ends. The entire unit is designed to give dependable service for years without expensive repairs or replacements.



ACCURATE PRESSURE GAUGE shows the air pressure in storage tank and air lines. Plainly marked with large, clear figures and mounted on top of housing where it is most convenient and easy to read at any time.



DEPENDABLE AUTOMATIC SWITCH maintains ample pressure on the air lines at all times without waste of power. It is set at the factory to stop the motor when pressure reaches 150 lbs. and start it when pressure drops to 115 lbs. Eliminates the necessity of watching your air supply all the time as was the case with the old hand start outfits.



CONVENIENT, ACCURATE OIL GAUGE at the bottom of the crank case shows oil level. Practically the only attention required by an HB Compressor is keeping oil up to the mark on the gauge and occasionally draining the oil and moisture chamber on the top of the outfit.



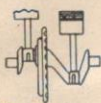
POSITIVE ACTING VALVES of modern plate type eliminate all danger of valve falling into the cylinder and causing expensive damage. Carbon troubles are reduced to a minimum by this efficient type of valve. Both intake and exhaust valves are of this type and are located in the one-piece removable head where they are easily accessible.



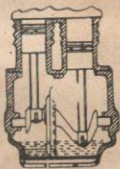
HIGH COMPRESSION PISTONS AND CYLINDERS are ground and fitted with the same care as is exercised in modern automobile construction. Pistons each fitted with two high grade compression rings and one special oil regulating ring. The careful machining, grinding and fitting of HB Compressor parts is largely responsible for the unusually high efficiency of the HB Pump.



ONE-PIECE, REMOVABLE HEAD. A big improvement over the old divided head. Reduces number of connections and amount of tubing, greatly improving the appearance as well as eliminating opportunities for leaks. Simplifies the operation of checking up the valves should it ever be necessary to get at them.

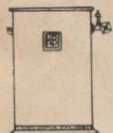


AUTOMOBILE TYPE CRANK-SHAFT and Connecting Rods. Bearings and bearing surfaces all carefully fitted. The HB factory is equipped with all the latest machinery for machining, finishing and fitting all parts with the greatest accuracy. Inspection of the most rigid kind insures you of the very highest quality workmanship and materials all the way through.



POSITIVE, FOOLPROOF LUBRICATION is accomplished by the splash system which automatically and efficiently lubricates all moving parts of the compressor. The ball bearings in the motor require only an occasional repacking with grease.

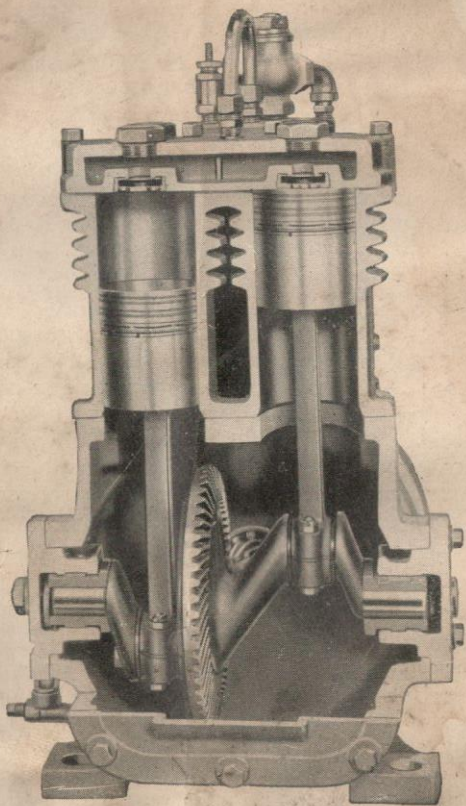
There are no oil or grease cups scattered around over the HB Outfit to be forgotten by the attendant, with disastrous results. The HB Compressor is designed to operate with a minimum of attention.



ELECTRICALLY WELDED, HEAVY DUTY TANKS. HB air storage tanks are manufactured complete in HB factories to conform with the codes in effect in various sections. Even where the code calls for welding only HB takes the extra precaution of riveting, and welding on both sides of seam, which makes a much stronger tank. HB Tanks are thoroughly tested at high pressures.



The cutaway view on the following page shows how your HB Silent Twin Automatic Air Compressor is designed very closely along the lines of utmost efficiency approved by modern automotive engineers. No other compressor can match this design for compactness, neatness, performance, freedom from trouble and low cost of operation. Give it reasonable care and it will give you compressed air at low cost for years.



Built Like an Automobile

Other HB Equipment That Will Help You Make Bigger Profits

Write for Bulletins of complete information on any of the items listed below that your shop needs.

HB Car Washer
HB Upright Air Compressor
HB Paint Spray
HB Electrical Test Bench
HB Trouble Shooter
HB Battery Tester
HB Battery Merchandiser
HB Constant Potential
Battery Charger
HB Buffer and Grinder
HB Electric Arc Welder
HB Electro-Plating Generator

The Hobart Bros. Co.
Troy, Ohio